

**In the
Supreme Court of the United States**

October Term, 1977

No. 80, Original

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HONORABLE EWING T. KERR, SPECIAL MASTER

**THE STATE OF COLORADO,
Plaintiff,**

v.

**THE STATE OF NEW MEXICO,
AND PAUL G. BARDACKE,
ATTORNEY GENERAL OF THE
STATE OF NEW MEXICO,
Defendants.**

**COLORADO'S BRIEF IN REPLY TO THE
EXCEPTIONS AND BRIEF OF THE
STATE OF NEW MEXICO**

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September 22, 1983

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INTRODUCTION

The Report of the Special Master on the equitable apportionment of the Vermejo River was entered December 31, 1981 (hereinafter Report). The Report was made after a lengthy trial in which both states were permitted full and wide-ranging presentations of evidence and cross-examination. At trial, the Special Master was liberal in allowing a full development of the facts, consonant with this Court's policy of comprehensive fact finding in actions within its original jurisdiction. See *New York v. New Jersey*, 249 U.S. 202 (1919); *United States v. Wyoming*, 331 U.S. 440 (1947). After carefully evaluating the reliability of the evidence presented and the credibility of the witnesses, the Special Master, an experienced trial judge, concluded that a diversion of up to 4,000 acre feet per year by Colorado would not materially affect existing New Mexico water users (Report, pp. 22-24). In reaching his recommendation the Special Master considered many relevant factors including conservation by the existing users in New Mexico and the balance of harm to New Mexico and benefits to Colorado.

New Mexico filed exceptions to the Special Master's Report. In its exceptions New Mexico argued that the doctrine of prior appropriation should be applied interstate to deprive Colorado of any use of water from the Vermejo River. New Mexico Exceptions to the Report of the Special Master and Brief in Support Thereof, April 7, 1982, at 5-9. Colorado argued instead that, while priority of appropriation was important, equitable apportionment called for the consideration of many other factors. Reply Brief of Colorado, May 7, 1982, at 16-32. In its opinion the Court rejected the interpretation of the law of equitable apportionment advanced by New Mexico. *Colorado v. New Mexico*, ___ U.S. ___, 103 S. Ct. 539, 545 (1982). Instead, the Court held that equitable apportionment is a flexible doctrine, which calls for the exercise of an informed judgment on a consideration of

many factors to secure a just and equitable allocation. *Id.*, at 545. The Court stressed that all relevant factors must be considered because the aim is always to secure a just and equitable apportionment without quibbling over formulas. See *New Jersey v. New York*, 283 U.S. 336 (1931). However, because the Special Master had not fully delineated the factual findings supporting his recommendations, the Court remanded for specific findings on five issues. *Colorado v. New Mexico*, 103 S. Ct. at 548-549. In so doing, the Court noted that additional hearings may be unnecessary in light of the extensive evidence already presented at trial. *Id.*, at 549, n. 14.

On December 20, 1982, the Special Master ordered the parties to submit briefs covering in narrative form the evidence and testimony previously presented involving the five items enumerated by the Court. He also ordered that additional evidence was not required. On March 5, 1983, New Mexico filed its Brief on Remand and a Motion to Receive Evidence. Its Brief on Remand contained much of the substance of the additional evidence it sought to present. Colorado opposed¹ the Motion to Receive Evidence on the grounds that the existing record adequately covered the issues raised by New Mexico and that the proposed additional evidence would be merely cumulative or irrelevant. The Special Master denied New Mexico's motion.

On May 13, 1983, New Mexico made an offer of proof in the form of a Narrative Tender of Evidence and Requested Findings of Fact and Conclusions of Law.² At that time, New Mexico renewed its request to receive

¹New Mexico characterizes this opposition as strenuous and vehement. It was neither, but merely pointed out the cumulative or irrelevant nature of the evidence New Mexico sought to present. Moreover, Colorado specifically reserved the right to put on additional evidence of its own if the record were reopened.

²New Mexico filed an Amended Narrative Tender of Evidence on June 17, 1983.

additional evidence. The Special Master entered his Additional Factual Findings on May 31, 1983, mootng New Mexico's renewed request. In the Additional Factual Findings (hereinafter Additional Findings) the Special Master, having carefully considered the evidence, re-affirmed his original recommendation that Colorado be awarded 4,000 acre feet per year.

SUMMARY OF THE ARGUMENT

Colorado's equitable entitlement to 4,000 acre feet annually from the Vermejo River has been recognized by the Special Master in accordance with the law of equitable apportionment announced by this Court. Upon a review of the lengthy and complete record in this case, the Special Master has provided the Court with an accurate description of the situation on the Vermejo River. He properly found that in New Mexico "the existing users of Vermejo water have not diligently and efficiently developed uses which would justify their need to retain their full decreed irrigation or water rights." The failure by New Mexico's users to fully develop their decreed rights is attributable to their conscious choice and is not due to current or historical shortages in the available water supply.

Available to New Mexico are numerous reasonable conservation measures which can enhance and conserve the available supply of water from the Vermejo River, most notably water administration. As the Special Master repeatedly noted, those reasonable conservation measures can be instituted by New Mexico and "increase its available supply of water to a point where the Colorado diversion might not have any impact at all." That conclusion is supported by clear and convincing evidence and shows that New Mexico is using more than its equitable share of the River. In particular, a single conservation measure — the closed stock and domestic water system — recently implemented by New Mexico has already provided it the ability to completely offset the effects of a Colorado diversion through elimination of a 98% wasteful use.

The benefits to Colorado from the recommended equitable apportionment of the Vermejo River will be significant. Colorado has established by clear and convincing evidence that the benefits of its diversion of 4,000 acre feet annually from the Vermejo River will substantially outweigh the harm, if any, to New Mexico resulting from that diversion. Colorado has also established that its diversion will be efficient and its uses are designed to eliminate inefficiency and conserve the common supply. The recommendations of the Special Master have achieved an equitable apportionment of the Vermejo River between Colorado and New Mexico.

I. THE SPECIAL MASTER CORRECTLY DETERMINED THAT ADDITIONAL HEARINGS WERE UNNECESSARY.

When filing its Brief on Remand, New Mexico sought leave to present additional evidence on the spills of water past the Vermejo Conservancy District (hereinafter District) headgate, on the depletions to the Vermejo River caused by stockponds and on the completion of a closed stock and domestic water system by the District. New Mexico's Brief on Remand contained extensive argument based on much of the additional evidence it sought to present (New Mexico Brief on Remand, pp. 43-45, 52-53). Thereafter, the Special Master denied the request to present additional evidence and New Mexico has alleged that this was error. It claims that exclusion of this evidence has denied representation to interests on the Canadian River and resulted in a report "... warped by inaccuracies." New Mexico Brief in Support of Exceptions at 10 (hereinafter N.M. Brief, p. ____). New Mexico's claims are exaggerated and incorrect.

A. The existing record adequately establishes the failure of the Vermejo Conservancy District to divert all the water from the Vermejo River to which it was legally entitled.

New Mexico's proposed additional evidence on spills past the District headgate and claimed contributions to the Canadian River consisted of proposed Exhibits F-56

and F-57 and the affidavit of Philip B. Mutz. New Mexico sought to use this data to quantify the volume of flood flows which spilled past the District diversion point in 1981 and 1982 and allegedly traveled downstream to the Canadian River. With this evidence it sought to bolster its claim that Colorado's diversion would injure water users on the Canadian River. This evidence is merely cumulative of the mass of evidence on this topic already in the record (N.M. Ex. F-29; Colo. Ex. 66) and the Special Master properly used his discretion in refusing to hold additional hearings. *Colorado v. New Mexico*, 103 S. Ct. at 549, n. 14.

During the course of trial the Special Master, over objections on the ground of relevancy, allowed New Mexico to present detailed testimony and introduce numerous exhibits regarding the alleged dependence of Canadian River water users on water spilled by the District. See e.g., Transcript pp. 1058-1060, 1383-1384 (hereinafter Tr. —). As a result, the record contains detailed testimony identifying the water users on the Canadian River and the relevant documents evidencing their entitlement to store and use water. See e.g., Testimony of Bradley Compton, Engineer and Assistant Chief of Water Rights Bureau, State of New Mexico, Tr. 1040-1056; Testimony of L. C. Strawn, Vice President, Board of Directors of the Arch Hurley Water Conservancy District, New Mexico, Tr. 2218-2238; N.M. Exs. G-3, G-4, G-5, G-6, G-7, G-8, G-10, G-15, G-28, G-30, G-31. The record also contains very detailed testimony and exhibits on the frequency and magnitude of spills past the District headgate for the years 1950 through 1979 and the injury alleged to result from a Colorado diversion. See e.g., Testimony of Philip B. Mutz, Chief Engineer, New Mexico Interstate Stream Commission, Tr. 1364-1385, 1412, 1419, 1426-1429; N.M. Exs. C-2, C-3, D-1, D-5, F-25, F-26, F-29, F-31, F-32 and F-48. Finally, the record contains a detailed discussion of the historical water supply and usages of the Canadian water users. See e.g., Tr. 1364-1385, 1412, 1419, 1426-1429, 2218-2238; N.M. Exs. C-3, F-25, F-26, F-31.

This evidence is highly revealing. First it showed that the District is entitled to divert all the flows of the Vermejo at its point of diversion and no priorities on the Canadian are entitled to demand that water be permitted to pass this diversion. *Accord, Colorado v. New Mexico*, 103 S. Ct. at 543. (Colo. Ex. 19, p. 29; Tr. 1112; Knox Deposition, pp. 34, 35, 40, 41.) It showed that spills past the headgate result from flash floods and from the clogging of the District headgate with silt and debris (Colo. Exs. 38, 40, 43). These flash floods have relatively large peak flows with not much volume (Tr. 1243). Measurable spills occurred in only six years of the thirty-year period of 1950 through 1979 (N.M. Ex. F-29). The total quantity of all spills during this period was only 6,900 acre feet, and the quantity exceeded 300 acre feet in only two years (N.M. Ex. F-29).

The evidence presented at trial also showed that these flood flows do not generally originate in Colorado and therefore could not be diverted by Colorado³ (Tr. 1227-1228, 1232-1244). Moreover, that evidence showed that there are nearly 155 river miles between the District headgate and Conchas Reservoir (Tr. 1426). New Mexico itself has concluded that upstream capture and use of these Vermejo River flood flows will have little effect on Canadian water users (Tr. 1075; N.M. Ex. G-10 2nd part). Thus, the tendered evidence on spills at the District headgate is cumulative, has little relevance to this case and has no bearing on the equities.

Due to the completeness of the existing record, New Mexico users on the Canadian River were certainly not deprived of representation nor was the Master's report "warped by inaccuracies." The Special Master considered the detailed evidence presented at trial and properly concluded in his Report that: "The Vermejo is virtually a closed system. Most of the water is consumed by various users and little, if any, of the water of the

³See detailed discussion on pp. 23-26, *infra*.

Vermejo reaches the Canadian River." (Report, p. 2.) And, "The effect of a diversion in Colorado on those who live below the Vermejo Conservancy District would be negligible and virtually non-existent." (Report, p. 4.)

B. Stockpond depletions.

New Mexico claims that the Special Master erred by not receiving additional evidence on depletions to the Vermejo River caused by stockponds and other water detention structures. It asserts that the failure to receive this evidence caused the Special Master to "repeat his earlier ruling, citing New Mexico's 'unregulated stockponds, fishponds and water detention structures' as a cause of waste on the river." (N.M. Brief, p. 11.) It also claims that had the Special Master received additional evidence he would not have made "inaccurate findings of water shortages caused by waste in 'unregulated stockponds, fishponds and water detention structures.'" (N.M. Brief, p. 13.) New Mexico misrepresents the Additional Findings of the Special Master.

On remand, Colcrado had suggested that stockponds and similar detention structures on the Vermejo River may have depleted the stream flow by some 2,000 acre feet per year. In his careful review of the evidence on available water supply, the Special Master considered this claim and rejected it as a questionable quantification difficult to depend upon (Additional Findings, pp. 10-11). Instead, based on New Mexico's Brief on Remand, the Special Master acknowledged the existence of some 2,024 stockponds in Colfax County, New Mexico. *Id.*, p. 18.⁴ He found that such water use was, to a certain extent, both necessary and beneficial. *Id.* However, he also recognized that the unregulated construction of these structures was one source of the water shortages

⁴New Mexico's Amended Narrative Tender of Evidence attempted to quantify only stockpond depletions to the Vermejo River, ignoring all such depletions to the Chico Rico drainage, a major source of supply to the Vermejo Conservancy District (Additional Findings, pp. 8-9; Tr. 229; Colo. Ex. 40).

being experienced by the District, a fact widely recognized by local and federal officials alike. *Id.* (Colo. Exs. 37, 38, 40 and 45.) On this basis the Special Master suggested that regulation of these stockponds "could not help but be an effort, *however small*, to conserve the water supply and put it to beneficial use." (Emphasis supplied), *Id.*

Nowhere did the Special Master make the "inaccurate findings of water shortages by waste" as alleged by New Mexico (N.M. Brief, p. 13). Rather, the Special Master to a large extent adopted New Mexico's positions and did not place a major reliance on reducing stockpond depletions as a reasonable conservation measure. Therefore, New Mexico has not been prejudiced by the decision of the Special Master not to receive additional evidence on stockpond depletions.

C. Closed stockwater system.

New Mexico also claims that the Special Master erred by not receiving additional evidence on the completion of the closed stock and domestic water system by the District. The only new evidence New Mexico sought to offer was the fact of its completion, the method of financing and completion of a water right transfer. The remainder of the evidence tendered by New Mexico was a reiteration of the efforts of the District to construct the closed system. Exhaustive evidence on this matter is already in the record and has been discussed at great length in the briefs before this Court. *See* Reply Brief of State of Colorado, May 7, 1982, pp. 50-53. (Tr. 1909-1910, 2761-2774; N.M. Ex. E-3.) In his Additional Findings the Special Master considered as true the evidence of completion of the closed system (Additional Findings, p. 20). Thus, the Special Master relied on the relevant portions of that evidence and New Mexico was not prejudiced by the Special Master's decision not to receive the remaining cumulative portions of the evidence.

II. THE SPECIAL MASTER CORRECTLY CONCLUDED THAT THE FAILURE OF USERS OF VERMEJO RIVER WATER TO DEVELOP THEIR USES IS DUE TO LACK OF DILIGENCE AND DOES NOT REFLECT CURRENT OR HISTORICAL WATER SHORTAGES.

After considering all the evidence on the existing uses of water from the Vermejo River,⁵ the current and historical use of water and whether existing uses have been developed with diligence, the Special Master made findings as to whether the failure by each New Mexico user to develop water rights was due to a lack of diligence or due to a current or historical shortage of water. The Special Master found that the existing levels of use reflect the conscious choice of those users and are not the result of current or historical water shortages (Additional Findings, pp. 3-9).

A. Vermejo Park Corporation.

The first New Mexico user on the Vermejo below the Colorado state line is the Vermejo Park Corporation (hereinafter Vermejo Park). Its diversion works are the farthest upstream on the Vermejo River in New Mexico and enjoy the second priority on the River (Colo. Ex. 25). The Special Master found that it had decreed rights to irrigate approximately 870 acres but had only irrigated

⁵With regard to uses of Vermejo River water, New Mexico asserts that: "Colorado's evidentiary analysis began in 1973" citing the testimony of Colorado's chief witness, Mr. Duane Helton (N.M. Brief, p. 19). Mr. Helton, at that point, was simply referring to information he had obtained from one source regarding Vermejo Park, which information did not predate 1973. However, in preparing his report and in giving his testimony, Mr. Helton analyzed the entire history of the Vermejo River as shown through records or otherwise (Colo. Exs. 5, 6). Moreover, it was Colorado that presented the evidence of the recorded flows of the Vermejo River at the Dawson gauge commencing in the year 1916.

New Mexico's unfounded assertion that Colorado's analysis began in 1973 is incredibly attributed to the Special Master as well. In its Exceptions, New Mexico states: "The Master's analysis began in 1973" (N.M. Brief, p. 3). This of course is belied by the thorough historical analysis contained in the Special Master's Additional Findings and the appendix thereto.

between 200-250 acres (Additional Findings, p. 3; *see also* Tr. 2059-2080). The Special Master concluded that Vermejo Park's failure to use its full decreed water rights was not based on current or historical water shortages but rather on lack of diligent development and perhaps lack of need (Additional Findings, p. 4; Colo. Ex. 68).

New Mexico asserts this level of usage is a result of current water shortages. Its claim of a shortage of water for Vermejo Park is based upon testimony by two Vermejo Park employees (N.M. Brief, pp. 24-26). The Special Master rightly questioned the credibility of that testimony and made his findings in accordance with the recorded stream flows at the Dawson gauge, with the acres actually irrigated and with the nature of the use of the property (Additional Findings, p. 3).

Using Appendix Table 2 of the Master's Additional Findings, a compilation of the actual U.S.G.S. records of the flows at the Dawson gauge for the period of record, Colorado has computed the average monthly flows of the Vermejo River at the Dawson gauge for the period from 1955-1979 (the period during which the rehabilitated District has been in operation) (Colo. Ex. 36).⁶ These average monthly flows, in acre feet, are as follows:

Oct	Nov	Dec	Jan	Feb	Mar
384	315	264	248	274	281
Apr	May	June	July	Aug	Sep
741	2,106	1,766	1,756	2,112	783

These figures show that during the irrigation season, April 15 to September 15 (N.M. Ex. D-4), the monthly flows are the highest. During the six-month period April through September the average monthly flow is 1,544 acre feet, and during the central irrigating period of May

⁶Colorado does not assert that average flows are the only measure of, or evidence relevant to, available supply for purposes of making an equitable apportionment. *See Wyoming v. Colorado*, 259 U.S. 419 (1922).

through August, the average flow at the Dawson gauge is 1,935 acre feet per month, or 7,740 acre feet for the entire four-month period.

The actual Dawson gauge figures (Additional Findings, Appendix Tbl. 2) show that there have been many times more water than is necessary to satisfy the senior priorities of Phelps Dodge Corporation and Kaiser Steel Corporation downstream and still satisfy the entire decreed right of Vermejo Park. Measurements of the Vermejo River at the Colorado-New Mexico state line confirm that fact (Colo. Exs. 5 at Tbl. 4, 68). Those records also show that the high flows occur during the irrigation season when Vermejo Park needs water. During the same period that Vermejo Park claims it was unable to irrigate more than 250 acres, the District was irrigating thousands of acres with a junior water right (Colo. Ex. 25; N.M. Ex. F-37). This evidence clearly establishes that there was generally sufficient water in the River for Vermejo Park to irrigate much more land than it has been irrigating. The New Mexico State Engineer, Mr. Reynolds, apparently agrees with this conclusion, testifying that Vermejo Park could have irrigated more than 250 acres (Tr. 2427). Thus, the Special Master's conclusion "that the Vermejo Park Corporation has not diligently put to use all the water available to it," naturally and logically followed from the stream flow records (Additional Findings, p. 3).

The Special Master correctly perceived that the Vermejo Park's failure to irrigate more than 250 acres is more closely tied to the availability of other irrigated lands in a different watershed (Tr. 1018, 2108-2109). The evidence establishes that the crop production needs of Vermejo Park are largely taken care of by the irrigation of its lands in the Cimarron River drainage (Tr. 2108-2109). Its indifference to irrigation from the Vermejo is also shown by the fact that it takes water only by means of one ditch (Tr. 2100-2104) and one pump, when the Vermejo River Decree (Colo. Ex. 25) permits it to divert

water from twelve ditches. This evidence indicates that Vermejo Park lacks desire and need to use its Vermejo River water for irrigation.

Its lack of desire to use this water is, as the Special Master noted, also attributable to the fact that Vermejo Park is primarily "an operation involving a hunting and fishing resort." (Additional Findings, p. 3; Tr. 2108-2109.) Vermejo Park owns a number of lakes which are entitled to store up to 2,847 acre feet of water for irrigation purposes (Colo. Ex. 25, p. 10). However, its resort clientele likes to fish in these lakes (Tr. 2108) and Vermejo Park has apparently chosen to use these structures primarily for recreational and aesthetic purposes rather than for the storage and release of water to maximize irrigation.

Based upon this telling evidence, the Special Master properly recognized that Vermejo Park's current and historic use reflected a lack of diligence, was a matter of its own choosing and did not result from current or historical water shortages.

B. Kaiser Steel Corporation.

The next New Mexico user on the Vermejo is Kaiser Steel Corporation (hereinafter Kaiser). The Special Master found that Kaiser owned the right to use 230 acre feet of water from the Vermejo and has leased rights to an additional 400 acre feet from Phelps Dodge Corporation (Additional Findings, p. 4). He found that the maximum use by Kaiser was 361.47 acre feet in 1976 and that this level of use was not due to shortage of supply (Additional Findings, pp. 4-5). The evidence amply supports this conclusion. Kaiser, through its lease from Phelps Dodge Corporation, has the right to divert 400 acre feet of water annually under the first priority on the River (Colo. Ex. 51).⁷ Kaiser owns another 230 acre feet of water with a

⁷This paper water right was leased to Kaiser by Phelps Dodge to avoid a finding of forfeiture, because that right has not been fully used since at least 1965 (New Mexico Exceptions to the Report of the Special Master and Brief in Support Thereof, April 7, 1982, p. 27).

priority senior to the District (Tr. 1722). Kaiser uses water in its coal mining operation. The water is needed year-round, except during a part of July when the mine shuts down for vacation purposes (Tr. 1726). Kaiser takes water from two points of diversion, one being an infiltration gallery and well in York Canyon at the mine site and the other being a pumping station on the Vermejo River (Tr. 1722-1723). An average of 25% of Kaiser's water needs has been supplied from York Canyon (Tr. 1744). This canyon and its drainage are wholly within New Mexico and will be unaffected by any apportionment to Colorado (Colo. Ex. 6, Fig. No. 1).

Despite its right to divert 630 acre feet, Kaiser has never diverted a total of more than 361.47 acre feet from both points of diversion (Colo. Ex. 6, Tbl. 2; Tr. 1727, 1738, 1747), and its water usage has declined since 1976 (Colo. Ex. 6, Tbl. 2). New Mexico showed an even smaller maximum use, 316.55 acre feet (N.M. Ex. D-6). Since this supply is required year-round, the monthly demands by Kaiser do not exceed 30 acre feet. And, as shown by the average monthly flows at the Dawson gauge and by the estimated state line flows, the levels of use by Kaiser have never been limited by shortage in supply (Colo. Exs. 5, 6). Indeed, Kaiser has never made a claim of shortage in supply. Based upon this evidence, the Special Master correctly found that Kaiser had available to it ample water to fully develop its water rights, but has chosen not to do so (Additional Findings, pp. 5-6).

New Mexico criticizes the Special Master's finding that Kaiser lacked the incentive to fully develop its water use. New Mexico points to the existence of a pumping plant capable of diverting Kaiser's entire supply from the Vermejo as evidence of its intention to develop its rights (N.M. Brief, pp. 28-29). It claims that:

Kaiser has maintained its full water right under New Mexico law by securing extensions of time in

which to apply the water to beneficial use.

(N.M. Brief, p. 29.)

New Mexico's criticism of the conclusions of the Special Master on Kaiser's water usage is unresponsive to the basic fact that Kaiser has never used the full measure of its right and to the fact that the Kaiser use has decreased.⁸ The Kaiser mine at York Canyon has been open since 1966, some 17 years (N.M. Brief, p. 28), and while New Mexico has not declared a forfeiture of the unused portion of its right, the only evidence as to why Kaiser has failed to use its entire water right is that it has not needed it. There is no indication when, if ever, the right would be fully used.

C. Phelps Dodge Corporation.

The third water user on the Vermejo River is Phelps Dodge Corporation (hereinafter Phelps Dodge) which is entitled to irrigate up to 501.19 acres with up to 1,002.38 acre feet of water (Colo. Ex. 25; N.M. Ex. G-2).⁹ This land is currently leased to the C.S. Cattle Co. The Special Master found that since 1965 Phelps Dodge and its lessee have irrigated between 80-150 acres and that at least 110 additional acres could have been irrigated (Additional Findings, p. 5). He also found that sufficient water was available to permit irrigation of additional lands if they had desired to do so (Additional Findings, pp. 5-6). Thus the failure to fully develop and exercise this water right can only be attributed to a decision not to do so.

⁸New Mexico's extensive discussion of Kaiser's two diversion points has nothing to do with the question of why Kaiser has failed to develop its water rights.

⁹Phelps Dodge has leased water sufficient to irrigate 200 acres, or 400 acre feet, to Kaiser to avoid forfeiture (Report, p. 5). Through its lease of that water, Phelps Dodge has, in effect, admitted that it cannot use all of its water rights. As noted above, Kaiser has failed to use all of this water right.

New Mexico agrees that since 1965 no more than 150 acres have been irrigated by Phelps Dodge and its lessee (Tr. 2163). It also agrees that an additional 110 acres are readily irrigable but contends there is insufficient water to do so (Tr. 2180). The Special Master properly rejected the contention of water shortage.

Phelps Dodge has the *first* priority on the River (Additional Findings, pp. 5-6; Colo. Ex. 25). Because its point of diversion is just below the Dawson gauge, the availability of water to Phelps Dodge is reflected by the Dawson gauge flows. That evidence shows that sufficient water was available during the irrigation season to satisfy the entire Phelps Dodge water right (Additional Findings, Appendix Tbl. 2; Colo. Ex. 67).

New Mexico's argument and the testimony of some of its witnesses that Phelps Dodge could not irrigate more than 80-150 acres are not credible (N.M. Brief, p. 30).¹⁰ At a time when "water was not available to irrigate the additional [Phelps Dodge] acreage . . .," with its number one priority (N.M. Brief p. 30), the upstream user, Vermejo Park, was irrigating between 200 and 250 acres with its lax irrigation practices and junior water right (Colo. Ex. 25; N.M. Ex. G-2). In addition, downstream, the individual Vermejo Canal users were irrigating over 300 acres with *junior* priorities and without the benefit of water storage facilities (Additional Findings, pp. 6-7). At

¹⁰New Mexico also claims that Phelps Dodge was justified in not irrigating more land because of the cost of reclaiming the land from flood damages (Tr. 2175), but this excuse is belied by the fact that there are at least 110 acres of land that could have been irrigated without any reclamation at all (Tr. 2180). Furthermore, both Mr. Compton (Tr. 1078, 1079, 1085, 1107-1109) and Mr. Reynolds (Tr. 2431), New Mexico witnesses, testified that Phelps Dodge could have irrigated more land.

the same time the District was irrigating thousands of acres under its junior water rights (Additional Findings, pp. 6, 8; Colo. Ex. 25; N.M. Ex. G-2). At no time during this period was Phelps Dodge required to pass water to any downstream water users. It is little wonder that, "A logical analysis of the water availability leads the Master to doubt the accuracy of New Mexico's claims." (Additional Findings, p. 5).

New Mexico asserts that there are substantial coal reserves on the Phelps Dodge property (N.M. Brief, p. 31) and claims that Phelps Dodge should be able to reserve 220-900 acre feet of water for mining uses, "when Phelps Dodge requires it." (N.M. Brief, p. 32.) However, potential and undeveloped future uses of water will not excuse nonuse of the water right. For, as this Court has stated:

Especially in those Western states where water is scarce, "[t]here must be no waste . . . of the 'treasure' of a River . . . Only diligence and good faith will keep the privilege alive." . . . Thus, wasteful or inefficient uses will not be protected Similarly, concededly senior water rights will be deemed forfeited or substantially diminished where the rights have not been exercised or asserted with reasonable diligence.

Colorado v. New Mexico, 103 S. Ct. at 546; (citations omitted). Since Phelps Dodge has not exercised or asserted its rights with reasonable diligence, it is not entitled to receive the protection of this Court.

D. Individual users from the Vermejo Canal.

There are five users who take water from the Vermejo Canal between the Vermejo River and the District reservoirs. Their decreed rights and actual usage, as found by the Special Master, are summarized as follows:

	Decreed Acreage	Actual Acreage Irrigated
Duell-Messick ¹¹	48.4	48.4
Pompeo	101.5	50
Ray Porter	16.49	14
Vermejo Park Corporation	46.73	46.73
Odom	264.69	113

The Special Master found that those who failed to irrigate their full acreage had sufficient water to do so (Additional Findings, pp. 6-8). This conclusion was supported by the official monthly flows at the Dawson gauge (Additional Findings, Appendix Tbl. 2). These records show that for each month during the irrigation season there has been sufficient water available to satisfy those water rights.¹² In addition to the recorded flows at the Dawson gauge there is an accretion to the River of at least 800 acre feet per year between the Dawson gauge and the District headgate (Tr. 1405, 1406). The Bureau of Reclamation said that figure could be 1,000 feet more for a total accretion of 1,800 acre feet per annum (Tr. 1463-1465).

With the exception of the Porter water right, all of these users from the District canal have priorities senior to the priority of the District. There is no evidence that the Porter right has been curtailed by the District or by water

¹¹The Special Master inadvertently allocated approximately 58 acres to the Messick uses (Additional Findings, p. 7). New Mexico concedes that "Messick was left only 48 acres after the transfer to Kaiser [cite omitted]." (N.M. Brief, p. 32.)

¹²The maximum duty of water for these users is two acre feet per acre. As shown in the table above, the amount of land presently irrigated is 272.13 acres. The maximum irrigation season demand for this amount of land is 554.26 acre feet (Colo. Ex. 25; N.M. Ex. G-2).

officials and under it nearly all of the 16.49 acres has been irrigated (Tr. 1071, 1088, 1099, 1101, 1102). At this same time the District was able to irrigate thousands of acres with water diverted under its junior priorities. Therefore, there can be no reasonable doubt that sufficient water was available to satisfy these users and that the failure of these parties to exercise the full amount of their rights is not due to water shortages but instead to their failure to develop their rights diligently.

One probable explanation noted by the Special Master for the lack of diligence of these water users in developing their water rights is the fact that many are not full-time farmers (Additional Findings, pp. 6, 7, 19). Mr. Pompeo has a full-time job as a school superintendent (Tr. 2204). Mr. Porter has a full-time job with a cattle company (Tr. 2186). While such employment is certainly not to be condemned, it limits the ability of the user to diligently exercise his water rights. See Additional Findings, pp. 19-20.

E. Vermejo Conservancy District

At the heart of New Mexico's case (and of its criticism of the Special Master) is its contention that "an act of God," i.e., a "drought" during the 1970's, has prevented the District from fully developing its water rights (N.M. Brief, pp. 4, 33-34), and that, given more time, money and water, the District would irrigate all of its acreage. Time, money and water have been allocated to this project over the years in large amounts (Colo. Exs. 37, 38, 40, 43, 48; N.M. Ex. E-3). Despite that, the District has not diligently developed its water resources and since the 1950's has settled into an historic water use pattern of irrigating about 4,500 acres annually (Additional Findings, p. 8; N.M. Ex. F-37).

The Special Master correctly perceived that the District's historic use of water could not be blamed on current or historical shortages, stating:

New Mexico claims that the nonuse on the part of the District is caused by the "drought" of the early seventies. However, the drought of the 1970's cannot be responsible for the nonuse which has existed in the District since its formation in the fifties, nonuse through a time period when all other users, and evidence from flow tables found sufficient water available. (Tr. 166-169, 2174-2175, 2211-2213).

(Additional Findings, p. 8.)

That perception and the corresponding conclusion that the District has not diligently developed its water supply derive from the weight of the credible evidence presented at the trial. For example, New Mexico Exhibit F-37 shows that for each year, 1969 through 1975, the District irrigated more acreage than it had in all but three of the previous fourteen years (N.M. Brief, pp. 34-35; N.M. Ex. F-37). Ironically, the years in which the greatest irrigation occurred are the same years that New Mexico claims the District suffered severe drought (N.M. Brief, p. 34).

New Mexico's claim is further refuted by the average number of acres irrigated annually by the District in the prior decades, decades during which no "drought" claim is made: i.e., 4,573.8 acres for the 1960's and 4,453.2 acres for the 1950's as compared to 4,147.4 acres for the 1970's. The slightly lower figure for the 1970's is attributable to the low water year of 1977, when the District did not release any water from its reservoirs for irrigation,¹³ resulting in a very low irrigated acreage figure that year (N.M. Ex. F-37). However, if the year 1977 is omitted, the average acreage irrigated during the 1970's increases to 4,534.33 acres. This demonstrates that during the 1970's,

¹³Every year the District gave preference to the more than 2,000 acre feet to be held in, and released from, the reservoirs in order to provide 36 acre feet of consumptive use for livestock watering, a 98% waste of water (Tr. 1316, 1318, 1319; N.M. Ex. E-3).

viewed as a whole, the District was able to irrigate as much acreage as it had the prior two decades. It shows that the number of acres irrigated by the District was not due to lack of supply. *See also* pages 30-34, *infra*.

The absence of any drought in the 1970's is further demonstrated by exhibits which show that precipitation in areas surrounding the Vermejo was not significantly lower on the average in the 1970's than in prior decades (N.M. Exs. F-4, F-6, F-8, F-9). In particular, New Mexico Exhibit F-4 shows no significant variation in precipitation at the City of Maxwell, located within the District itself, during the 1950's, 1960's and 1970's. The variation in any decade was slight, thus refuting any claim by the State of New Mexico that a "severe drought" in the 1970's had curtailed the District's irrigation (N.M. Ex. F-37).¹⁴

New Mexico attempts to rehabilitate its case regarding the District's historic use by reengineering its case on appeal. It does so by creating an exhibit that purports to show water shortages in the District (N.M. Brief, pp. 34-35). That exhibit is deceptive. It is taken from New Mexico Exhibit F-37, but omits the important column containing the amount of water released for irrigation in each of the years. Thus in 1955, for example, the amount of water actually released to the 3,763 acres irrigated was 9,225 acre feet, or 2.45 acre feet per acre, an amount greatly in excess of the 1.25 acre feet per acre shown in the brief. It is also greatly in excess of the 1.5 acre feet per acre allowed by the decree (Colo. Ex. 25; N.M. Ex. G-2). An

¹⁴At page 25 of his Additional Findings, the Special Master perceptively discusses a significant inconsistency in New Mexico's factual argument:

New Mexico discusses the growth and development of Colfax County as a result of the Vermejo benefits. The growth occurred in "the decade of the 1970's." (Defendants' Brief on Remand, p. 67.) However, in earlier discussion of historic water uses and supply, the decade of the 70's was labelled a drought period. (Tr. 1179, 1193, 2211-2213.)

allocation in excess of 1.5 acre feet per acre also occurred in 1956, 1958, 1959, 1962 and 1965 (N.M. Ex. F-37).

To arrive at its proration figures in that exhibit, New Mexico divides the amount of water released from the reservoirs by 7,380 acres, the amount which the District is permitted by the Bureau of Reclamation to irrigate, rather than by the amount of acres actually irrigated (Colo. Ex. 33; N.M. Ex. F-37; Tr. 1306, 1308). Since the 7,380 acres have never been irrigated, the New Mexico proration figures shown on the exhibit never correspond to the acreage actually irrigated and understate the amount of water available and released for irrigation (N.M. Ex. F-37). The Bureau of Reclamation confirms that the District has not developed its full acreage (Colo. Ex. 36; Tr. 1569).

Another failing of the exhibit is that it does not reflect the amount of water available in the reservoirs and which was not released for irrigation. See N.M. Exs. F-23, F-24. These trial exhibits show that large amounts of water were carried over in the reservoirs in some years (N.M. Exs. F-23, F-24). Part of the carryover, of course, was to provide the 2,000 acre feet for the wasteful stock-water usage, but significant amounts in excess of that were not released for irrigation in years when New Mexico claims a shortage existed. For example in 1979, New Mexico claims a shortage of 4,430 acre feet (N.M. Brief, p. 41) but failed to use 6,800 acre feet stored in three of its reservoirs (N.M. Exs. F-23, F-24). Similar conditions existed in other years such as 1966 and 1967. *Id.* A showing of the carried over water would reflect the amount of water really available for irrigation if wasteful practices were eliminated.

The exhibit is also misleading because it assumes that the maximum duty of water, 1.5 acre feet per acre, is necessary for a full supply. That premise ignores the meaning of duty of water and ignores the fact that the District has not needed the maximum duty of water and

has not used it when available. In the New Mexico court decrees adjudicating water rights on the Vermejo River and Chico Rico, the court found that the *maximum* duty of water for the lands comprising the District was 1.5 acre feet per acre (Additional Findings, p. 2; N.M. Ex. G-2; Colo. Ex. 25). Duty of water is commonly understood as:

[T]hat measure of water, which, by careful management and use, without wastage, is reasonably required to be applied to any given tract of land for such period of time as may be adequate to produce therefrom a maximum amount of such crops as ordinarily are grown thereon. It is not a hard and fast unit of measurement but is variable according to conditions.

United States v. Alpine Land & Reservoir Co., 697 F.2d 851, 854 (9th Cir. 1983), quoting *Farmers Highline Canal & Res. Co. v. City of Golden*, 129 Colo. 575, 584-585, 272 P.2d 629, 634 (1954); see also *Basin Electric Power Cooperative v. State Board of Control*, 578 P.2d 557, 564 (Wyo. 1978); *State ex rel. Reynolds v. Mears*, 86 N.M. 510, 515-516, 525 P.2d 870, 875-876 (1974); 5 *Water and Water Rights* § 408.2 at 76-82 (R. Clark ed. 1972). Since the duty of water varies according to conditions, the maximum duty of water represents the greatest amount of water ever required to grow a crop without waste. Yet, New Mexico treats the maximum duty of water as the minimum amount necessary to provide the District a full water supply. It then argues that anything less than the maximum duty of water constitutes a shortage. Only by converting this measure of maximum need into the measure of minimum supply is New Mexico able to construct its claimed water shortages.

The fact that duty of water is variable and that the maximum duty is not necessary is graphically shown by the exhibit at pages 34-35 of New Mexico's Brief. The exhibit shows that no correlation exists between the amount of water prorated and the number of acres

irrigated by the District. In 1969, 1974 and 1975, the District irrigated 6,294, 6,262 and 5,422 acres, respectively, based on prorations of .33 acre feet/acre, .54 acre feet/acre and .25 acre feet/acre, respectively. On the other hand, in years such as 1959 and 1962 when the maximum duty of 1.5 acre feet per acre was available to irrigate all 7,379 acres, the District irrigated only 4,693 and 5,869 acres, respectively.¹⁵ This demonstrates that the duty of water can vary from year to year, that the District is able to irrigate and has irrigated vast acreages with less than 1.5 acre feet per acre, and that even when the maximum duty of water has been available the District has not fully developed its acreage. The evidence credits the Special Master's conclusion that the District has not been limited by shortage in developing its acreage (Additional Findings, p. 8, 9).

F. Water users on the Canadian River

New Mexico asserts that water users on the Canadian River below its confluence with the Vermejo are dependent upon water spilled past the District headgate (N.M. Brief, pp. 14-18). It now claims that any diversion by Colorado will reduce the supply of water available to these users (N.M. Brief, pp. 10-11, 14-18, 35, 50-51, 52). The Special Master considered these claims and found that "[t]he Vermejo is virtually a closed system. Most of the water is consumed by the various users and little, if any, of the water of the Vermejo reaches the Canadian River." (Report, p. 2.) And, "[t]he effect of a diversion in Colorado on those who live below the District would be negligible and virtually nonexistent." (Report, p. 4.)

The conclusions of the Special Master are borne out by New Mexico's own evidence. New Mexico claims that the Canadian River water users are dependent upon the flood flows which spill past the District headgate and

¹⁵These proration figures are discussed earlier in this section.

that a diversion by Colorado will injure these users. (N.M. Brief, pp. 11, 17). For Colorado's proposed diversions to have any effect on these flood flows, the flows must be available for diversion, in whole or part, by Colorado. The evidence shows they are not.

There are 30 square miles of the Vermejo River drainage in Colorado and 12 square miles of that drainage are located above Colorado's proposed points of diversion (Colo. Ex. 5; N.M. Ex. F-36; Tr. 1426-1427). All of Colorado's points of diversion are located above 9,920 feet elevation (Colo. Ex. 5; N.M. Ex. F-36). Thus, for Colorado to divert these flood flows they must originate in the high mountain terrain of the Vermejo drainage above Colorado's points of diversion. In his testimony, New Mexico's chief engineering witness explains why this will not occur:

Within that annual precipitation, of course, there are varying intensities of precipitation, the plains area and dissected plateau receive much of their precipitation from intense thunderstorms which produce flash floods of relatively large peak flows with not much volume.

Whereas in the higher mountain portions of the drainage area, much of the drainage results from snow fall which produces a flow over a longer period of time.

(Tr. 1243-1244.)

Since all of the Colorado portion of the Vermejo drainage is above 9,000 feet, intense thunderstorms are not common (Tr. 1243-1244). Thus, the flood flows which spill past the District headgate do not generally originate in the high mountain drainage in Colorado and therefore are not available for diversion by Colorado. Since they are not available for diversion by Colorado, Colorado's diversions can have little or no effect on flood flows spilling past the District headgate.

Moreover, for New Mexico's arguments to have any logical force, it must be established that these low volume flood flows do, in fact, reach the users on the Canadian River. However, the fact that flood flows pass the District headgate does not mean they are available to water users on the Canadian River some 155 river miles downstream (Tr. 1426). New Mexico's own actions indicate that the flood flows are not available to the Canadian users to the extent it claimed.

Under New Mexico law, new appropriations of water are allegedly not allowed on fully appropriated streams (N.M. Brief, p. 70). The reason for this, according to the New Mexico State Engineer, is that any new appropriation would detrimentally affect existing rights (Tr. 2365-2366). Thus, with the shortages alleged to plague water users on the Canadian River (Tr. 1042-1056, 1368-1376; N.M. Exs. C-3, F-25, F-26, G-4, G-5, G-6, G-7, G-8, G-9, G-15, G-28, G-30, G-31), one would not expect the State of New Mexico to grant any junior water storage rights for flood waters tributary to the Vermejo River which could be potentially available for users downstream on the Canadian. Yet, that is precisely what New Mexico has done. Over objection by Canadian River water users, New Mexico water officials allowed a junior flood water appropriation on Van Bremmer Arroyo, a tributary of the Vermejo River (N.M. Ex. G-10 2nd part; Tr. 1075). It was apparently approved on the grounds that flood waters could be captured by a junior priority with little effect on downstream users (Tr. 1075). Thus, New Mexico itself has acknowledged that diversion of flood flows from the Vermejo may have little or no impact on the Canadian water users.

New Mexico sought to rehabilitate its case on the Canadian River through its Amended Narrative Tender of Evidence. In reliance on proposed Exhibit F-56 it claimed that in August and September of 1981, 5,500 acre

feet of water spilled past the District headgate (N.M. Brief, p. 17). However, proposed New Mexico Exhibit F-56 also reveals that on only one day in August and September of 1981 did the mean daily flow of the Vermejo River exceed the diversion capacity of the District's canal, 600 c.f.s. In August and September of 1982, New Mexico claims 6,500 acre feet spilled past the District's diversion facilities (N.M. Brief, p. 17). At no time during that period did the mean daily flow exceed the diversion capacity of the canal (Proposed N.M. Ex. F-57).¹⁶ Presumably, the spills of water within the District's diversion capacity are due to dirt and debris allowed to accumulate at the diversion structure (Colo. Exs. 38, 40, 43).

Moreover, New Mexico's proposed evidence, if it is accurate, portrays extreme hydrologic events that have occurred only twice in the preceding thirty-one years (N.M. Ex. F-29). These extreme events do not, however, establish that the flood flows would have been available for diversion by Colorado. They also should not be permitted to mask the inefficient operation of the District's diversion canal. The District is entitled to divert all water in the Vermejo River at its point of diversion and it allowed spills in 1981 and 1982 of more water than Colorado would have diverted in each year, i.e. 4,000 acre feet (Colo. Ex. 19, p. 29).

The foregoing illustrates that New Mexico's claims of injury to users on the Canadian is argument without foundation in logic or fact. The Special Master was correct when he concluded that the effect of a diversion by Colorado on those who live below the District would be virtually nonexistent.

¹⁶For purposes of computing spills, New Mexico uses "mean daily flow v. diversion capacity." (Tr. 1269.)

III. THE SPECIAL MASTER'S ANALYSIS OF THE AVAILABLE SUPPLY OF WATER FROM THE VERMEJO RIVER THOROUGHLY CONSIDERS THE RELEVANT FACTORS LISTED BY THE COURT AND HIS FINDINGS ARE SUPPORTED BY THE CLEAR AND CONVINCING EVIDENCE PRESENTED AT TRIAL.

In response to the Court's inquiry regarding "the available supply of water from the Vermejo River," *Colorado v. New Mexico*, 103 S. Ct. at 549, the Special Master reviewed the evidence and made numerous additional findings (See generally, Additional Findings, pp. 9-27, 28). His conclusion on this matter is:

2. The available supply of water from the Vermejo River is sufficient for current New Mexico users, and with reasonable conservation measures would meet the needs of Colorado users as well. The available water supply can be enhanced through diligent and complete development of the Vermejo source as well as alternative sources. Many current users do not require a continuous supply and systems of reservoirs provide relief for those who do.

(Additional Findings, p. 28.)

His analysis in reaching that conclusion may be fairly summarized as follows:

A. Variations in streamflow

The Special Master recognized that the flow of the Vermejo River varies from year to year. Depending upon the period of measurement, different annual flow calculations will result. The Special Master concluded that "more than enough [water is available] to supply the current uses below the [Dawson] gauge." (Additional Findings p. 11.) Using the guidelines set forth in *Wyoming v. Colorado*, 259 U.S. 419 (1922), in light of the flow in the Vermejo for "each individual month and each

individual year," he found that on the Vermejo River ". . . there does not exist a situation where the supply is 'intermittent' and 'materially deficient at short intervals.'" (Additional Findings, p. 11.) As shown by the discussion at pages 10, 11, 13, 15-20, *supra*, the Special Master's conclusions are correct and fully supported by the evidence.

New Mexico vehemently criticizes the Special Master's analysis. It asserts that he failed to recognize the demands of the New Mexico users and therefore was unable to see the deficiencies in the supply that it asserts exist (N.M. Brief, pp. 39, 47). New Mexico also claims the Special Master used average annual flows as his standard for determining available supply, and claims this standard was rejected by this Court (N.M. Brief, p. 36). For these reasons it asks that this Court reject the Special Master's determination of available supply.

The first step in New Mexico's analysis is to establish its demand of water which it claims is either 17,000 or 11,400 acre feet (N.M. Brief, p. 39). However, these figures for demand overstate the acres irrigated, overstate the amount of water needed and understate the water supply historically received. See generally pages 31-34, *infra*. For the reasons stated at pages 20-23, *supra*, these demand figures are deceptive, greatly exaggerated and were properly discounted by the Special Master.

New Mexico's claim that the Special Master relied on average annual flows in determining the available supply is incorrect. The Special Master considered various average annual flows to illustrate the general water supply (Additional Findings, p. 11). He then observed:

Obviously, the figures can be used to reach nearly any result, and averages are unfortunately unavailable to irrigate crops and provide water for other uses; however, it is the opinion of the Master

that even looking at each individual month and each individual year, there does not exist a situation where supply is "intermittent" and "materially deficient at short intervals."

(Additional Findings, p. 11.)

The Special Master plainly did not rely on average annual flows but instead looked at the best available information, the monthly flows for each month of each year 1916, 1917, 1920 and 1928 through 1979. This is far more precise than the evidence of annual streamflows available to the Court when making its equitable apportionment in *Wyoming v. Colorado*, *supra*, and far more precise than the stream flow records used by the Court when it rejected Kansas' claim of injury in *Colorado v. Kansas*, 320 U.S. 383 (1943).

New Mexico, however, asserts that monthly flows are not sufficiently precise because they obscure flood flows and do not show "true availability" (N.M. Brief, p. 49). Thus, New Mexico would apparently require proof of the daily flow diverted by New Mexico users in order to determine the available supply. Yet, it is New Mexico's own lax administrative practice that has prevented this information from being available. Moreover, this suggestion is not materially different than requiring that the low flow of record be used as the measure of available supply, disregarding the natural variability of stream flows in the West. This standard was rejected by the Court in *Wyoming v. Colorado*, 259 U.S. at 484, recognizing that use of reservoir storage of high flows and other reasonable conservation measures were required in assessing the available supply. The Special Master properly did not adopt New Mexico's suggested standard. Instead, to determine the adequacy of the available supply, he considered all relevant factors including the monthly flows for each year of record, the needs of each New Mexico user, the availability of reservoir storage and other reasonable conservation measures (Additional

Findings, pp. 1-21). This Court would permit him to do no less. *Colorado v. New Mexico*, 103 S. Ct. at 545; *Nebraska v. Wyoming*, 325 U.S. 589, 618 (1945).

B. Need for a continuous supply.

The Special Master properly found that the only New Mexico user from the Vermejo that has need for a year-round supply is Kaiser (Additional Findings, pp. 16-17). Its monthly demand is minimal, between 13 and 30 acre feet (N.M. Ex. F-30; Additional Findings, pp. 16-17). The figures at the Dawson gauge reveal that sufficient water is available for Kaiser's senior priorities on a monthly basis. However, Kaiser also takes water from York Canyon, a source which would not be affected by Colorado's diversion (Tr. 1744; Additional Findings, p. 17). The remaining direct flow water users on the Vermejo all use water for irrigation from April 15 to September 15 only (N.M. Ex. D-4). The monthly figures at the Dawson gauge also reveal a more-than-adequate supply in the Vermejo to meet the needs of these direct flow irrigation users (Additional Findings, Appendix Tbl. 2).

The District's irrigation needs are met by the reservoir system which stores the water supply and through controlled releases makes it available on a monthly and year-to-year basis (Tr. 1296; N.M. Exs. F-23, F-24). This system allows the District to capture high flows for later use and allows water to be carried over from a particularly wet year for use during a drier year (N.M. Exs. F-23, F-24). Contrary to New Mexico's claim that "... the Vermejo has historically provided no carryover water to conserve" (N.M. Brief, p. 55), the District in fact carried over water stored from the Vermejo River in all but two years from 1955 through 1979 (N.M. Exs. F-23, F-24). This demonstrates that by the use of reservoir storage the District is able to equalize and enhance its water supply. See *Wyoming v. Colorado*, *supra*.

In an attempt to discredit the conclusions reached by the Special Master on the available supply of the Vermejo River, New Mexico exaggerates the demand for water on the Vermejo River. At pages 40 and 41 of its Brief, New Mexico again attempts to reengineer its claim of inadequacy of the Vermejo River supply at the Dawson gauge in relation to demands for water downstream from the gauge. Stating that the "Demand at Dawson Gauge for Full Acreage" is 17,000 acre feet, New Mexico purports to compute the historic shortages on the Vermejo below the gauge. New Mexico cannot create on paper a greater demand for water than actually exists.

The 17,000 acre feet "Full Demand" figure grossly exaggerates the true demand. It assumes that the District has at all times been ready, willing and able to irrigate the full 7,379 acres and that the maximum duty of water, 1.5 acre feet, is required to do so. The inaccuracy of these claims is shown by New Mexico's own brief, and by other evidence in the record. The table at pages 34 and 35 of the New Mexico Brief purports to show water prorrations and acres irrigated by the District. A proration of 1.50 acre feet/acre is, according to New Mexico, "[a] full water supply." (N.M. Brief, p. 34.) In 1959, when a "full water supply" was in the District reservoirs and was available to irrigate all 7,379 acres, the District farmers chose to irrigate only 4,693 acres.¹⁷ Similarly, in 1962, the District chose to irrigate only 5,869 of its acres, even though a "full water supply" was available from storage in the District's reservoirs. Historic use by the District proves it has never irrigated all of its acreage, even when a "full water supply" was present.

The second way New Mexico misuses the figures to establish a shortage in available supply is by equating maximum duty of water with a full water supply. Yet, as explained at pages 21-22, *supra*, to do this converts the measure of maximum need into the measure of minimum supply. The result is that the "demand" figures appear-

¹⁷By contrast, in 1969, when less than a "full water supply" was in the District reservoirs, the District was able to irrigate 6,294 acres.

ing in the tables at pages 34, 35, 40, 41, 43 and 44 of New Mexico's Brief are greatly exaggerated. These figures assume that, unless the maximum duty of water is applied to all 7,379 acres of the District's lands (or a total of 17,000 acre feet at the District headgate), a "shortage" exists (N.M. Brief, pp. 39-47). That contention is not true.

The District does not "need 1.5 acre-feet per acre per annum" to have an adequate supply of water for its irrigation purposes (N.M. Brief, p. 39, n. 11). The 1.5 acre feet per acre figure represents the maximum amount of water which may lawfully be applied to the District lands (Colo. Ex. 25, p. 3), and the District has historically chosen to apply a lesser amount of water to its irrigated acreage even when the maximum duty of water is available (N.M. Exs. F-23, F-24, F-37). For example, in 1967 the District irrigated 3,902 acres and released 4,280 acre feet of water from its reservoirs for irrigation purposes (N.M. Ex. F-37). According to the table at page 40 of New Mexico's Brief, the District experienced a "shortage of supply" of 8,560 acre feet of water in 1967. However, no "shortage of supply" existed. New Mexico Exhibits F-23 and F-24, the end-of-month volumes of water stored in the District's Stubblefield Lake and Lake #2 show that through the end of 1967 some 6,000 acre feet of water were being stored in those two lakes. New Mexico Exhibit F-24 also shows that through the end of 1967 some 5,300 acre feet were being stored in the District's Lake #13. Thus, 11,300 acre feet of water were being stored by the District through the end of 1967, a year in which New Mexico claims a "shortage of supply" of 8,560 acre feet (N.M. Brief, p. 40). That evidence shows that the District had more water to release during the irrigation season but apparently felt that the maximum duty was not necessary to irrigate the crops.

Similarly, in 1979 the District irrigated 3,398 acres, releasing 3,690 acre feet of water from its reservoirs (N.M. Ex. F-37). New Mexico claims a "shortage of supply" during that year of 4,430 acre feet (N.M. Brief, p. 41).

Incredibly, New Mexico Exhibits F-23 and F-24 show nearly 6,800 acre feet of water in storage in Stubblefield Lake and Lakes #2 and #13 through the end of 1979. This evidence shows not only that the District determined that the maximum duty of water was not necessary to irrigate the land, but that a lesser number of acres was irrigated than the supply would allow. The basic premises of New Mexico's tables in its brief, i.e., that the District needs 1.5 acre feet of water per acre and that the District would irrigate the maximum allowable acreage if it had the supply of water, are refuted by New Mexico's own exhibits.

Those exhibits further demonstrate that in some years the District actually violated its decree and allocated more than 1.5 acre feet of water per acre irrigated. New Mexico Exhibit F-37 shows that in 1965 the District released 7,970 acre feet of water to irrigate only 3,218 acres of land, meaning that 2.48 acre feet of water was made available to each acre irrigated (N.M. Ex. F-37; Tr. 1308-1309). In 1955, 9,225 acre feet of water were released to irrigate 3,763 acres, or a total of 2.45 acre feet per acre. The District also violated the Vermejo Decree by making available more than the maximum duty of water in 1956, 1958, 1959 and 1962 (N.M. Ex. F-37). Thus, contrary to New Mexico's claims, the Special Master correctly pointed out that water administration in New Mexico would mean less waste and more water for lawful uses.

The discussion above shows that the District's water needs cannot be condensed to supply/demand charts, as New Mexico would argue. The evidence demonstrates that at times the District irrigates less than all of its acreage without a full proration, even though it could have irrigated all of its acreage with a full proration. It shows that the Special Master correctly considered numerous factors in determining the available supply, and rightfully did not focus exclusively on misleading

charts which do not depict water requirements or irrigation practices. Having considered all of the evidence, the Special Master presented to this Court the following and other detailed findings based upon a consideration of *all* of the evidence in this case:

It is the opinion of the Master supported by substantial evidence that the existing users of Vermejo water have not diligently and efficiently developed uses which would justify their need to retain their full decreed irrigation or water rights. While shortages and dry years do exist in the history of the Vermejo River, it does not appear that those shortages are the basis behind the current users failure to fully develop their decreed water rights.

(Additional Findings, p. 9.)

C. Equalizing and enhancing the water supply through water storage and conservation.

The Special Master found that the District is the only New Mexico user that could be materially affected by an apportionment to Colorado (Additional Findings, p. 8; Tr. 1323). The District is also the New Mexico user with the greatest ability to equalize and enhance the available water supply through storage and conservation (Additional Findings, pp. 12, 17). Abundant water storage capacity already exists in the District reservoir system (Tr. 1298). Those facilities include a diversion structure on the Vermejo capable of diverting the entire flow of the River 99% of the time and a reservoir system which can store over 22,600 acre feet of water (Tr. 1298; Colo. Ex. 50, p. 2). This storage system makes it possible for the District to store all of the available water and thereby equalize the water supply on a monthly and an annual basis (N.M. Ex. F-23, F-24).

In the portion of his Additional Findings pertaining to equalizing and enhancing the water supply through water storage and conservation, the Special Master thoroughly discusses conservation in the context of each state's duty "to conserve the common supply." *Colorado v. New Mexico*, 103 S. Ct. at 547. (Additional Findings, pp. 11-12). The Special Master examined the evidence to determine whether New Mexico was fulfilling its duty and concluded that "the New Mexico users are not doing all that is possible to preserve and enhance their available supply." (Additional Findings, p. 16.) His discussion is particularly important because it shows: (1) that New Mexico does not diligently allocate and administer water from the Vermejo River; (2) that the absence of water administration in New Mexico provides little incentive for water users in that state to use water efficiently or to practice diligently conservation; and (3) that the injury which New Mexico claims may occur could be alleviated through administration of the available supply (See generally, Additional Findings, pp. 12-16).

The evidence clearly supports the Special Master's analysis. Mr. Compton, head of the State of New Mexico department charged with the administration of the streams, testified repeatedly that his department makes no attempt to ensure that the proper amount of water is being diverted in relation to the acreage being irrigated or to declare all or part of the water rights forfeited for nonuse (Tr. 987, 1072, 1087-1089, 1098-1100, 1101, 1107-1109, 1115, 1116, 1117). In fact, the State of New Mexico has no idea of how much, by whom or when water is used. This absence of administration of water usage on the Vermejo and failure to give notices of forfeiture was confirmed by Mr. Reynolds, the New Mexico State Engineer (Tr. 2422-2436).

An example of potential overusage detrimental to the District that could have been curtailed through water administration is evidenced in New Mexico's own

Exhibit A-130, which indicated that during the period from September 17 to October 22, 1980, C. S. Cattle Company, the Phelps Dodge lessee, may have diverted approximately 300 acre feet from the Vermejo River. This period is after the irrigation season, i.e., April 15 to September 15 (N.M. Ex. D-4). The Phelps Dodge lessee apparently diverted in one month, after the irrigation season, all of the water which it could lawfully apply throughout the year, i.e. 300 acre feet for 150 acres, having also diverted water during the irrigation season (Tr. 2168). Mr. Davis of the C. S. Cattle Company acknowledged that it irrigated during the regular irrigation season stating that the C. S. Cattle Company "took all it could get" from the Vermejo (Tr. 2168). Prevention of such excess diversions, with a consequent saving of water, would have inured directly to the benefit of the District.

New Mexico's general indifference to administration along the Vermejo River sanctions wasteful water uses (see Colo. Ex. 41). For nearly 30 years prior to completion of the closed stock and domestic water system, the District had been releasing large volumes of water from its reservoirs for livestock watering purposes. This water was delivered through ditches and laterals, requiring eighteen hours or more to flow from the reservoirs to the livestock. Approximately 2,154 acre feet of water had to be released from the District's reservoirs annually in order to deliver the approximately 36 acre feet which are actually consumed by the livestock. This excessive loss, approximately 2,118 acre feet, in the delivery of this stock water, i.e., a loss of over 98% was known to New Mexico water officials (Colo. Ex. 41; N.M. Ex. E-3).¹⁸

¹⁸Under New Mexico's water laws, a 93% loss of water prior to application to beneficial use has been found to be so unreasonable that the use is not considered a beneficial use. *Jicarilla Apache Tribe v. United States*, 657 F.2d 1126 (10th Cir. 1981), applying New Mexico water law. See also *State ex rel. Erickson v. McLean*, 62 N.M. 264, 308 P.2d 983 (1957).

The curious attitude in New Mexico toward the administration of water rights is perhaps best illustrated by the results of the District's request for a water master to administer water rights on the Vermejo and Chieco Rico drainages (Colo. Ex. 41). A meeting was held between District and state officials to discuss this request. At that meeting the state officials pointed out that the District's water storage rights were not in order. *Id.* The state officials also pointed out that if a water master was appointed, measuring devices would have to be installed on all reservoirs and water sources. *Id.* The District would then be charged for all water passing the meters, not water received. *Id.* Most significantly, the State said it would also charge the District for what it believed to be the *excessive* losses in the canals and laterals when making farm deliveries. *Id.* Finally, when the decreed storage level was reached in the District's reservoirs, further storage by the District would not be permitted, regardless of the ability to store more water. *Id.* However, the state officials did offer an alternative to such administration. They suggested that the District consider operating as it had in the past until challenged by the state. *Id.* No water master was appointed.

This example shows that one of New Mexico's chief water rights administrators, Mr. Compton, a witness in this case, was aware of the waste of water by the District's canals and laterals but made no effort to correct the situation (Colo. Ex. 41). Thus, this is a case where proper administration could prevent the waste of water and result in conservation of the common supply. In the face of this evidence, New Mexico would have the Court reject the Special Master's findings, deny water to Colorado and instead believe that ". . . administration could not conserve Vermejo water . . ." (N.M. Brief, p. 72.)

D. Availability of substitute sources of water to relieve demand for water from the Vermejo River.

The question of whether "substitute sources of water [are available] to relieve the demand for water from the Vermejo River," is obviously related to the questions of whether, when and by whom such sources would be needed as a result of the Colorado diversion. If reasonable conservation measures are available to offset the effect of a diversion by Colorado, then the need for alternative supplies is greatly diminished, if not eliminated. That is the situation here because, as the Special Master found, "[t]he injury, if any, to New Mexico resulting from the Colorado diversion could be offset by reasonable conservation measures." (Additional Findings, p. 29.)

In his review of the record, the Special Master correctly noted the evidence showed that Vermejo Park, Kaiser and the District all have sources of water other than the Vermejo (Additional Findings, p. 17). He then stated that he did

... not mean to imply that these alternate sources should and will be total replacements for the water from the Vermejo River. They are not sufficient for that purpose. They merely serve to relieve the demand for Vermejo River water, which water is not denied in its entirety to New Mexico users, nor will it be with the proposed Colorado diversion.

(Additional Findings, p. 27.)

The Special Master correctly found that the alternate sources could not completely replace the Vermejo River, nor was such replacement necessary.

Neither Vermejo Park nor Kaiser will have any need for an alternate water supply as a result of the Colorado

diversion (Tr. 1323). However, each does have a water supply from sources other than the mainstream of the Vermejo. Vermejo Park owns water rights for irrigation of lands in the Cimmaron River watershed (Tr. 2109). It has used this water instead of its Vermejo River water in order to accommodate the recreational use of its Vermejo property (Additional Findings, p. 3). Thus, it is not completely dependent on the water in the Vermejo River. Kaiser, in the event of severely low flows along the mainstem of the Vermejo River, has a diversion point in York Canyon, which can supply water to the mine for a limited time.¹⁹ Kaiser also has performed a study in relation to the importation of some 800 acre feet annually from the Cimmaron River watershed (Tr. 1728; N.M. Ex. F-33, pp. 33-35).

Nor is the District entirely dependent upon the Vermejo. The supply of water received by the District from the Vermejo River accounts for only about 54% of its total water supply (Colo. Ex. 5, Tbl. 7; Colo. Ex. 6, Tbl. 3; Tr. 229; Additional Findings, pp. 8-9). The Chico Rico accounts for about 36% of that supply and Willow, Crow, Curtis and Salt Peter Creeks account for the remaining 10% (Additional Findings, pp. 8-9; Colo. Exs. 5 at Tbl. 7, 6 at Tbl. 3, 38, 40, 43; Tr. 229). While the Chico Rico and the various smaller tributary creeks are not alternate sources in the sense of previously unused water supplies, their availability does show that the District is not wholly dependent upon the Vermejo River.

¹⁹While New Mexico claims this source could not supply Kaiser's entire supply for an extended period of time (N.M. Brief, p. 54), the record shows that such a supply would not be needed for any extended period, if at all (Additional Findings, Appendix Tbl. 2).

IV. REASONABLE CONSERVATION MEASURES ARE PRESENTLY AVAILABLE IN NEW MEXICO WHICH WILL ELIMINATE WASTE AND INEFFICIENCY IN THE USE OF WATER FROM THE VERMEJO RIVER. COLORADO'S PROPOSED USE IS DESIGNED TO PREVENT WASTE AND MAXIMIZE EFFICIENT USE OF VERMEJO RIVER WATER.

The Special Master identified several areas in which New Mexico could eliminate waste and inefficiency from its use of Vermejo River water, including: improved administration of water rights and of diversions of water from the Vermejo River in New Mexico; maintainance of diversion structures in proper working condition; greater devotion to diverting and using efficiently the available water supply; refusal to encourage or sanction wasteful water uses or practices (Additional Findings, pp. 18-21). If New Mexico chooses to institute these reasonable conservation measures, the Special Master concludes there will continue to be "an adequate water supply to satisfy the needs of all users." (Additional Findings, p. 21.) If New Mexico refuses to discharge its duty to act reasonably in conserving the common supply, the Special Master states that, "New Mexico's inefficient water use should not be charged to Colorado." (Additional Findings, p. 20.)

A. Conservation and efficient use through administration.

The evidence fully supports the Special Master's findings on this point. The evidence in this case reveals that administration of the waters of the Vermejo River and the Chico Rico River is virtually nonexistent. This contrasts with the situation in Colorado where there are strict administration, records of diversions and the curtailment of wasteful diversions (Tr. 510-523). Colorado does so because it has long recognized that proper water administration is as important to proper water use as is the granting of the right. C.R.S. 1973, §§37-92-501, 502; *Wadsworth v. Kuiper*, 193 Colo. 95, 562 P.2d 1114 (1977). The testimony of the State Engineers for

each state highlights the differences between water administration in New Mexico and Colorado (Additional Findings, pp. 13-16). The subject of conservation through water administration is discussed in detail above and to avoid excessive repetition, the Court is referred to that discussion which appears at pages 35-37, *supra*.

New Mexico criticizes Colorado and the Special Master for their discussion of conservation measures available to New Mexico. It says that "Colorado's case respecting conservation was nothing more than unfounded innuendo and accusation, none of which is supported by fact."²⁰ New Mexico calls the Special Master's treatment of the conservation issue "entirely conjectural" and "superficial," stating that the "Master simply rambles on about an undefined, generalized need for conservation" (N.M. Brief, pp. 57, 58), when the Special Master's discussion is neither conjectural nor superficial. To evaluate New Mexico's argument, the Court must be made aware of several facts.

As discussed at pages 35-37, *supra*, the State of New Mexico keeps no records of diversions from the Vermejo in New Mexico or of amounts of water applied to a beneficial use.²¹ New Mexico has no idea of how much, by whom or when water is used. With the exception of Kaiser, the individual users maintain no records. Thus, by means of lax administrative practices, New Mexico precludes a determination of precise demand and actual beneficial use. New Mexico did little to aid this Court's

²⁰That argument, of course, is ridiculous. One "fact" which Colorado has stressed throughout this case is that a closed stock and domestic water system could eliminate the waste of over 2,000 acre feet annually (See Reply Brief of the State of Colorado before this Court, May 7, 1982, pp. 51-53). That aspect of Colorado's case is now a reality which New Mexico cannot deny (N.M. Brief, pp. 64-68).

²¹These are matters of great concern in Colorado with regard to which records are kept (Additional Findings, pp. 14-15; Tr. 516-519).

understanding of available supply in the Vermejo River when it refused to participate with Colorado in installing measuring devices at the Colorado-New Mexico border to measure the flow of the Vermejo at that point (Tr. 726, 1119). Colorado nonetheless installed a gauge at the Colorado-New Mexico border and measurements were obtained (Colo. Ex. 5; Tr. 726).

Colorado presented a great deal of evidence regarding uses in, and conservation efforts available to, New Mexico (Colo. Exs. 69, 70; Tr. 851-868, 2556-2592). Many of these matters could, to a large extent, be simply corrected through better water administration. Based upon the evidence the Special Master has suggested "reasonable steps to minimize the amount of diversion that will be required" by New Mexico users.²² Where those conservation measures could be quantified with precision, the Master did so (Report, pp. 18, 20, 21). When quantification was not possible, the Special Master's Additional Findings and the record make clear that important water savings can be made. *See* pages 35-37, *supra*. New Mexico now attacks the Special Master's findings because they are not quantified with mathematical precision. Yet, New Mexico should not be permitted to use its own lack of administration and record keeping to establish its claim that no water can be conserved. That position, if accepted by the Court, would encourage states to obscure their water use practices and needs in order to avoid their duty to help conserve the common supply. Instead, that position should be rejected as an attempt to frustrate the law of equitable apportionment.

²²The evidence regarding Colorado's uses demonstrates that efficiency and conservation are built into those uses (Additional Findings, pp. 21, 22; Tr. 508-523, 563-565, 609, 712, 738, 746, 798; Colo. Exs. 13, 15). Because a severe water shortage exists in the Purgatoire Valley in Colorado, highly efficient uses, ranging from 60-75% efficiency, have been designed (Additional Findings, p. 21).

B. Closed domestic and stockwater system.

The waste of over 2,000 acre feet of water annually by the District can now be eliminated by the closed stock and domestic water system and that amount left in the reservoirs (N.M. Ex. E-3). This savings, standing alone, will offset the effects of a Colorado diversion of 4,000 acre feet annually. The reason that the saving of approximately 2,000 acre feet in the reservoirs will offset a Colorado diversion of 4,000 acre feet is as follows. There is a 10% loss in the District canals from the Vermejo River to the reservoirs and an evaporation loss of 25% from the two main reservoirs fed by the Vermejo River (Tr. 1271, 1286; Colo. Exs. 69, 70, 71; N.M. Ex. F-29). There is also approximately a one-third loss of water from the District reservoirs to the farm headgates (Tr. 1315). In total, there is a loss of approximately two-thirds of the water from the River to the farm headgates; i.e., one-third from the River to the reservoirs and an additional one-third from the reservoirs to the farm headgates (Colo. Exs. 69, 70, 71). A depletion of 4,000 acre feet of water at the River, resulting from Colorado's diversion, therefore, would mean a loss of approximately 1,300 acre feet at the farm headgates, i.e., one-third of 4,000. The savings of 2,000 acre feet at the reservoirs as a result of the closed stockwater system provides an additional 1,300 acre feet at the farm headgates, i.e., two-thirds of 2,000. This makes the saving of 2,000 acre feet at the reservoirs the approximate equivalent of 4,000 acre feet at the River and would wholly offset the effects of a Colorado diversion (Colo. Exs. 69, 70; Tr. 2556-2592).

The District's closed stockwater system was not only essential to eliminate a wasteful use of the District water, but it was eminently feasible both from the engineering and economic standpoints, as demonstrated by New Mexico Exhibit E-3, by testimony of witnesses such as Mr. Knox, the chairman of the District board of directors (Tr. 2766-2774) and by New Mexico's Brief at pages 64-68. Furthermore, it has benefits above and beyond the elimination of the waste of nearly 2,000 acre feet of water

annually. The benefits include the availability of stockwater twelve months out of the year rather than nine and one-half months and the furnishing of domestic water. These savings in water and benefits in services will cost only \$12 to \$25 per month for each user (N.M. Ex. E-3).

The Special Master recognized that, while the District users benefit from the domestic water supply and year-round stockwatering system, the District should not retain all the water saved by the installation of that system because they had simply eliminated a wasteful practice (Additional Findings, p. 20).²³ This logic extends to the other conservation measures in New Mexico and, as a matter of policy on interstate streams, this reasoning is essential. To hold otherwise would permit a water user to gain an equity from waste, nullify the "duty to conserve" water and remove any incentive which a state would have to eliminate waste. However, as this Court has said, "wasteful and inefficient uses will not be protected," and the Special Master was correct in not protecting such uses. *Colorado v. New Mexico*, 103 S. Ct. at 546.

In any event, the Special Master has determined that New Mexico users already have a water supply sufficient to satisfy their historic demands (Additional Findings, pp. 11, 28). Thus, New Mexico's claim to all of the water which is saved as a result of reasonable conservation measures is not based upon any need for that water. Rather than recognize that Colorado has a right to its equitable share of the water in the Vermejo River, New Mexico has argued, in effect, that Colorado should subsidize wasteful and inefficient uses in New Mexico. See generally N.M. Brief, pp. 56-68. New Mexico claims that the water saved by conservation, particularly by the

²³The Special Master correctly noted that the District has a sufficient supply of water to satisfy its existing uses. See discussion at pp. 18-23, *supra*.

District's closed stockwater system, which eliminated a 98% wasteful use, should be awarded to New Mexico (N.M. Brief, pp. 64-68). To arrive at this conclusion, New Mexico ignores its duty to eliminate waste to conserve the common supply, and assumes that a corollary to the duty to eliminate waste is the right of the user who discontinues the wasteful practice to a superior water right in the water previously wasted. New Mexico is wrong.

In all of the states which embrace the doctrine of prior appropriation, a beneficial use is the measure of the water right and no rights are acquired by wasteful use. *See e.g., Weibert v. Rothe Bros., Inc.*, 618 P.2d 1367, 1371 (Colo. 1980); *Jicarilla Apache Tribe v. United States*, *supra*; *State ex rel. Erickson v. McLean*, *supra*; *Wyoming v. Colorado*, 259 U.S. 419 (1922). This Court has also held that in the context of equitable apportionment of interstate streams, upon each state is imposed a duty to eliminate waste. *Colorado v. New Mexico*, 103 S. Ct. at 546-547. The rationale underlying the conservation duty is that by eliminating waste, New Mexico does not acquire a right to the water saved. Instead, New Mexico is entitled to maintain its historic level of water use while the water which New Mexico has previously wasted is available for apportionment between the states.

C. Stockpond depletions.

The gratuitous and unwarranted attacks on the Special Master by New Mexico continue with respect to stockpond depletion. Although New Mexico devotes a great deal of discussion to the stockponds (N.M. Brief, pp. 76-80), it apparently fails to realize that the Special Master to a large extent found in its favor concluding that such uses were both necessary and beneficial. On this point, the Special Master found, "Reduction and/or regulation [of stockponds] of some type could not help but be an effort, however small, to conserve the water supply and put it to beneficial use." (Additional Findings, p. 18.)

The extent to which reasonable conservation measures in Colorado might eliminate waste and inefficiency in the use of water from the Vermejo are discussed in the following section.

V. THE PRECISE NATURE OF THE PROPOSED COLORADO USE OF VERMEJO WATER AND THE BENEFITS THAT WOULD RESULT FROM A DIVERSION BY COLORADO WERE ESTABLISHED BY CLEAR AND UNCONTRADICTED EVIDENCE.

On remand the Special Master was directed to make additional factual findings on the precise nature of the proposed interim and ultimate uses of Vermejo River water in Colorado and the benefits that would result from such a diversion to Colorado. In response, the Special Master found that the interim use would be the irrigation of 2,000 acres with "[p]lans to use and reuse the water as it flows down the valley result[ing] in a high efficiency expectation." (Additional Findings, p. 22.) He noted the permanent uses would be power generation, timber operation, washing of coal from coal mines which would save on the transportation of waste material, domestic and recreational uses, and the supplementation of an inadequate water supply in the Purgatoire River basin in Colorado (*Id.*, at 22, 24). The Special Master wisely noted the difficulty of his task because of the "speculative nature of benefits to be experienced by one not currently using the water" and the "natural reluctance to spend large amounts of time and money developing plans, operations and cost schemes." (*Id.*, at 23.) This Court recognizes that there must be a degree of speculation in the assessment of benefits from future uses and further recognizes that this feature will not preclude the award of water for future uses. *Colorado v. New Mexico*, 103 S. Ct. at 547. On the basis of all of the testimony on these subjects, the Special Master concludes that "the benefits to be experienced by Colorado upon the development of Vermejo River water are substantial." (Additional Findings, p. 23.)

The Special Master's Additional Findings are fully supported by the evidence. Under Colorado law, the Vermejo River water, once diverted into the Purgatoire drainage, is treated as imported water. Imported water is not subject to the usual limitation that a water user may make only one use of the water and then must let it return to the stream. See e.g., *Pulaski Irr. Ditch Co. v. City of Trinidad*, 70 Colo. 565, 203 P. 681 (1922). Instead, the importer of the water is entitled to make a succession of uses of the water so long as its volume can be distinguished from the volume of the stream system into which it is introduced. C.R.S. 1973, § 37-82-106(1) (1982 Supp.). The purpose of this rule is to encourage maximum use of the imported water and minimize the need to import additional supplies. *City & County of Denver v. Fulton Irr. Ditch Co.*, 179 Colo. 47, 506 P.2d 144 (1973). The record shows that the Colorado users intend to take advantage of this right to efficiently use the Vermejo water by making a succession of uses (Colo. Exs. 13, 15).

When the water is first released into the Purgatoire drainage, it will be captured in a reservoir. This reservoir will allow Colorado to conserve water and efficiently regulate its releases to ensure maximum beneficial use. On an interim basis the water will be beneficially used for irrigation in the upper reaches of the Purgatoire River Valley where approximately 2,000 acres of land would be irrigated (Colo. Ex. 13, pp. 6-9; Colo. Ex. 15, pp. 21-24; Tr. 796). Water would be used and reused from lands in the upper valley to lands in the lower valley. The efficiency of this water use would be between 61-75% (Tr. 746; Colo. Ex. 13, pp. 6-9; Additional Findings, p. 21). The ultimate uses of water would be (1) to supplement an inadequate supply of water available for existing Colorado uses, a point emphasized by the Colorado State Engineer and by officials from the City of Trinidad and Purgatoire River Water Conservancy District and CF&I (Tr. 535, 536, 537, 603, 604, 623, 624, 639, 641, 642, 652, 656, 664, 673, 674, 675, 711, 784, 796); (2) to operate a power plant, with electricity

generated by this facility being used to supplement existing power sources in the upper Purgatoire Valley (Colo. Exs. 13, 15; Tr. 744), and to provide electrical power to a sawmill which would supply timbers for mining operations (Colo. Exs. 13, 15; Tr. 742); (3) to provide water for industrial, domestic and reclamation purposes at two coal mines presently existing and two additional mines to be opened; (Tr. 739, 740, 741; Colo. Ex. 13); (4) to wash coal coming from these mines and separate waste materials, thereby significantly reducing the cost of transportation (Tr. 738; Colo. Exs. 13, 15); (5) to supply domestic needs which will increase as a result of industrial development (Tr. 747; Colo. Ex. 13); (6) to provide for synthetic fuel development (Tr. 663, 664, 672; Colo. Exs. 13, 15). The specific benefits which will result are the supplying of the aforementioned uses, including the alleviation of water shortage in the Purgatoire Valley and the stimulation of the economy of Las Animas County, Colorado, which is economically "substandard" or "depressed" in comparison with the rest of the state (Tr. 640, 641, 816, 817; Colo. Ex. 15). An analysis of these uses is clearly and specifically set forth in Colorado Exhibit 13 and the benefit analysis is clearly and specifically set forth in Colorado Exhibit 15. These exhibits fully support the Special Master's findings that the harm, if any, to New Mexico users is clearly outweighed by the benefits to be derived from the proposed Colorado uses (Additional Findings, p. 24-28).

New Mexico criticizes the Special Master saying "he makes no findings showing the precise nature of the contemplated uses of Vermejo water in Colorado or any benefits therefrom that would outweigh injury to New Mexico." (N.M. Brief, p. 82.) New Mexico then says that the Special Master's "report would enable Colorado to accomplish what the Court has sought to prevent — an award of water for undetermined future uses for which only speculative or unproved benefits could be attributed." (N.M. Brief, p. 83.)

The Special Master did provide in his Additional Findings as well as in his Report "the precise nature of the proposed interim and ultimate use in Colorado" and he did describe and find substantial the benefits that would result from a diversion to Colorado (Additional Findings, p. 22-24). All of this was done after he had found that by conservation, including water administration as efficient as that in Colorado, any harm to New Mexico would be precluded. (*Id.* at 21, 29.) New Mexico in its inordinate criticism of the Special Master seizes on the word "precise" in this Court's specification of this item and implies that that calls for a minutely detailed description of a particular activity in terms of engineering and financial analyses. Indeed there were such analyses to a very considerable extent in Colorado Exhibits 13 and 15. This Court said, however, that the findings under this item should look to the "precise nature" of the proposed uses. *Colorado v. New Mexico*, 103 S. Ct. at 549. New Mexico overlooks the word "nature." This is what this Court requested and this is what the Special Master did define, the nature of the uses that would be accomplished in Colorado, recognizing that such detail as would come with the actual diversion and use of the water could not be furnished at the present time.

New Mexico attempts to exploit the fact that Colorado does not have any present uses of Vermejo water which would make possible a "precise" determination of benefits. However, it must be remembered that the New Mexico interests have prevented the Colorado water right holder from utilizing Vermejo water by enjoining any such use in *Kaiser Steel, et al. v. CF&I*, No. 76-244 (D.N.M. 1976).²⁴ Thus, the standard posited by New Mexico is impossible to comply with. It alleges Colorado must have defined with absolute precision all aspects of its future use. It would have Colorado do so in the face of a binding court order that the Colorado interests not divert

²⁴When Colorado attempted to obtain a negotiated resolution of the Vermejo River water allocation by interstate compact, New

water. This cart-before-the-horse approach may appear to them to be a useful litigation strategy, but it is not the standard contemplated by this Court.

VI. THE ADVERSE EFFECTS, IF ANY, OF COLORADO'S DIVERSION WILL BE MINIMAL AND CAN BE OFFSET BY REASONABLE CONSERVATION EFFORTS IN NEW MEXICO AND COLORADO.

The Special Master's analysis and factual findings on the fifth and final area in which this Court requested additional findings are complete and straightforward. *Colorado v. New Mexico*, 103 S. Ct. at 549. His conclusions flow logically from his findings in the previous portion of his Additional Findings (Additional Findings, pp. 24-26).

Beginning with the premise that the effects, if any, of a Colorado diversion would be felt almost entirely by the District,²⁵ the Special Master correctly points out that the District is the New Mexico user which can most easily insulate itself from those effects: through effective use of its system of reservoirs, development of its alternate water supplies and employment of reasonable conservation measures (Additional Findings, p. 27). See *Wyoming v. Colorado*, *supra*.

²⁴Continued

Mexico, after participating in discussions for a day, terminated those discussions with the statement that "it would be inappropriate and not in the long-term interest of comity for us to encourage the continuation of these negotiations" and that "we [the New Mexico State Engineer and his associates] have concluded that we must recommend to the Interstate Stream Commission at our meeting on June 3 that these negotiations be terminated" (Colo. Ex. 53).

²⁵To avoid this conclusion New Mexico must repudiate the testimony of its primary expert witness at trial, Mr. Mutz (N.M. Brief, pp. 37, 101-104). His testimony (Tr. 1246, 1323, 1379) was corroborated by other evidence (Colo. Ex. 5, pp. 6-10; Colo. Exs. 67, 68, 69, 70).

The testimony of Mr. Mutz and the monthly flows at the Dawson gauge support the Special Master's conclusion that the District would be the only New Mexico user that could be affected by Colorado's diversion. Those figures establish that the months when Colorado could physically divert water from its diversion points are the months when the flow of water in the Vermejo is the greatest.²⁶ See also discussion of available supply at pages 10-11, 27-30, *supra*. Because Colorado can divert less than one-third of the measured flow at the Dawson gauge (Additional Findings, p. 25), and because the maximum legitimate demand by Vermejo Park, Kaiser, Phelps Dodge and the individuals diverting from the Vermejo canal is only about 1,405 acre feet of water for an *entire year*, the River will obviously have sufficient water to satisfy those demands (Colo. Exs. 68, 69).²⁷

The fact that the District has not fully utilized the water available in its reservoirs and has the ability to conserve an additional 2,000 acre feet of water at the reservoirs (or the equivalent of 4,000 acre feet at the District headgate) means the District will be able to offset any adverse effects of the Colorado diversion and maintain the level of irrigation it has developed during the last 30 years, even after the Colorado diversion (Colo. Exs. 5 at Tbl. 6, 69, 70; N.M. Exs. F-23, F-24; Additional Findings, pp. 20-21; N.M. Brief, pp. 64-68). Through use of

²⁶Water will be diverted by Colorado from Ricardo, Fish and Little Vermejo Creeks at elevations ranging from 9,920 feet to over 10,000 feet in elevation. "Because of freezing conditions during the winter season, it is anticipated that Colorado diversions would take place only during mid-April through mid-October." (Colo. Ex. 5, pp. 3, 5.)

²⁷New Mexico's discussion at page 102 of its Brief, and New Mexico Exhibit F-33, assume that Colorado will divert nearly all of the flow in the Vermejo at the Colorado-New Mexico border. Colorado's diversions are upstream from that point and can capture at most one-half of the Colorado production (Additional Findings, p. 26; Colo. Exs. 5, 6).

its reservoirs, the District can carry over water and even out the high and low flow years and thereby achieve a maximum utilization of existing storage.

New Mexico's criticism of the Special Master's findings and prediction of "substantial" injury are predicated upon incorrect assumptions and assertions which find no support in the record (N.M. Brief, pp. 90-109). New Mexico argues that the Special Master's recommendations will reduce the acreage which the District has irrigated by 3,897.87 acres (N.M. Brief, p. 90). That figure apparently refers to the difference between the number of acres which the District is permitted, by contract, to irrigate, and the number of acres which the District has historically irrigated (N.M. Ex. F-37). New Mexico implies that the Special Master has looked only to the 1970's, when the District irrigated an average of 4,147.4 acres annually, to calculate the acreage historically irrigated by the District. However, it was not only during the 1970's that the District failed to irrigate all of the acreage which it could have irrigated. During the 1960's and the 1950's, periods for which no claim of "drought" is made by New Mexico, the District irrigated an average of only 4,573.8 acres and 4,453.2 acres, respectively; far less than the allowed 7,379 acres. The Special Master has not "reduced" the acreage irrigated by the District, he has only confirmed its practices over the past three decades.

The "economic" report (N.M. Ex. F-33) and testimony on which New Mexico bases its predictions of financial disaster to Colfax County were incredible, and were rightly rejected by the Special Master (Additional Findings, p. 27). New Mexico's economic report provides no basis for its discussion of the economic consequences in New Mexico of a diversion of Vermejo River water in Colorado (N.M. Ex. F-33; N.M. Brief, pp. 98-102, 107, 108). As its basic premise, the report assumed that Colorado would divert the *entire* flow of the Vermejo River (Tr. 2305, 2313-2314). However, Colorado would divert less

than one-half of the water which it produces, and only approximately one-fourth of the Vermejo River's virgin flow, and could not affect the flow in the New Mexico tributaries to the Vermejo River or in the Chico Rico system. This point is dealt with succinctly by the Special Master:

Finally, New Mexico presents an impressive array of figures allegedly representing the economic injury resulting from reduced water supply. However, for the most part these figures presuppose that no Vermejo River water is available for New Mexico users, and such is not the case even if New Mexico does not implement any additional conservation measures. Colorado would be diverting less than one-half of the water it, as a state, produces. New Mexico users of Vermejo water are not suddenly faced with a dry riverbed; water still flows through New Mexico in the Vermejo River and its tributaries.

(Additional Findings, p. 27.)

Additionally, the economic report acknowledges that its analysis of the relation between the Vermejo River and the economy of Colfax County is speculative, stating:

It is difficult to determine in an exact manner just how much of the employment and income reported above for Colfax County occur in the Vermejo watershed or are dependent upon economic activity within the watershed. There are simply no standardized statistics that are reported for that subregion of the county economy.

(N.M. Ex. F-33, p. 27.)

The report is unreliable and provides no basis for concluding that the New Mexico users will be materially harmed by a Colorado diversion.

VII. SUGGESTED TERMS AND CONDITIONS TO PROMOTE SHARING THE COMMON SUPPLY IN THE EXERCISE OF COLORADO'S EQUITABLE SHARE OF THE VERMEJO RIVER.

The Special Master affirmed his original recommendation that Colorado be allocated 4,000 acre feet per year from the Vermejo River (Additional Findings, p. 29). He has found on the basis of clear and convincing evidence that injury to New Mexico "... as a result of this diversion is nonexistent or could easily be offset by reasonable conservation measures." *Id.* In the interest of renewed interstate comity, Colorado suggests that conditions could be placed on its use of Vermejo River water to ensure the most equitable sharing of the common supply and to dispel any possibility that Colorado's diversion would cause injury to New Mexico or its users.

Colorado suggests that its diversion of water from the Vermejo River watershed in Colorado be limited to points at or above those three points decreed in the Colorado water adjudication proceeding (Colo. Exs. 9, 10). These three points of diversion are as follows:

A point on the north bank of Ricardo Creek in unsurveyed Township 35 South, Range 70 West of the 6th P.M., Costilla County, Colorado, from whence a monument on the Colorado-New Mexico State Line marked Mile 119 bears S 14°13'18" E, a distance of 11607.33 feet.

A point on the north bank of Little Vermejo Creek in unsurveyed Township 35 South, Range 70 West of the 6th P.M., Costilla County, Colorado, from whence a stone marked XXII being on the line common to Costilla and Las Animas Counties bears S 52°14'52" E, a distance of 5480.12 feet.

A point on the north bank of Fish Creek in unsurveyed Township 35 South, Range 69 West of

the 6th P.M., Las Animas County, Colorado, from whence a stone marked XXII being on the line common to Costilla and Las Animas Counties bears S 21°10'23" W, a distance of 8509.37 feet.

Approximately one-half of the Vermejo River drainage in Colorado lies below these decreed diversion points (Colo. Ex. 5, Tbl. 1). New Mexico, using the period of 1950 to 1978, found that approximately 3,650 acre feet of water was annually available at Colorado's decreed points of diversion (Tr. 1322-1324). These figures reveal that in some years, less than 4,000 acre feet of water would be available at these points for diversion by Colorado even though sufficient water would be available in Colorado to supply the entire apportionment most years (See Colo. Ex. 5, Tbls. 4, 5).

Therefore, as a corollary to the limitation that Colorado may divert Vermejo River water only at or above the decreed points of diversion, Colorado's diversion should be calculated on the basis of a ten-year progressive average, as was done in *Nebraska v. Wyoming*, 325 U.S. 589 (1945), and as is used in Article III(D) of the Colorado River Compact for measuring deliveries from the Upper Basin states to the Lower

et seq. Under this condition Colorado would be allowed to take an amount of water each year that would result in an average diversion of no more than 4,000 acre feet of Vermejo River water per year for any period of ten consecutive years reckoned in continuing progressive series commencing with the first year in which Colorado diverts water.

Use of a ten consecutive year progressive average is a necessary compliment to the suggested limitation on Colorado's points of diversion. As indicated, Colorado, in certain years would receive less than 4,000 acre feet

apportioned to it. Although Colorado might, in some years, divert more than 4,000 acre feet of water, such a diversion could only occur in those years in which Colorado's total contribution to the Vermejo River system was higher and generally more water would also be available to New Mexico users (*Compare Colo. Ex. 5, Tbl. 4 and Colo. Ex. 5, Tbl. 5*).

The manner in which Colorado suggests that it divert an annual average of 4,000 acre feet from the Vermejo River is intended to afford greater protection for downstream users and demonstrates that Colorado is willing to share the burden of drier years if allowed to share in the benefits of wetter years. By diverting less than 4,000 acre feet in some years and by taking more than 4,000 acre feet water only in years of plenty, Colorado will receive its equitable share of the Vermejo River and assure a minimal impact on New Mexico's users.

CONCLUSION

The Special Master concluded that Colorado is entitled to utilize a portion of the water of the Vermejo River. This conclusion was reached on the basis of a complete and adequate record, which was the result of sixteen days of trial, extensive testimony and over 200 exhibits. New Mexico seeks to discredit this conclusion, not by dealing with the record, but by criticizing the findings of the Special Master and by the presentation of charts and tables which inaccurately represent the Special Master's findings and the evidence presented at trial.

Colorado respectfully submits that the findings of the Special Master are supported by clear and convincing evidence. Colorado further submits that its claim for an equitable share of the waters of the Vermejo River is of serious magnitude. It has shown, likewise by clear and convincing evidence, that without a diversion of 4,000 acre feet of water in Colorado, New Mexico will be using

more than its equitable share of the water of the Vermejo River because the benefits to Colorado from such a diversion will substantially outweigh the possible harm to New Mexico and because reasonable conservation measures by New Mexico will more than offset the loss of water, if any, resulting from Colorado's diversion. Therefore, the recommendation of the Special Master should be affirmed.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I, Robert F. Welborn, certify that I am a member of the bar of this Court and that on September 22, 1983, pursuant to Rule 28 of the Rules of the Supreme Court of the United States, I caused to be mailed the requisite number of copies of the foregoing Colorado's Brief In Reply To The Exceptions And Brief Of The State Of New Mexico, by first class mail, postage prepaid, to the following officials of the State of New Mexico:

The Honorable Toney Anaya
Governor of the State of New Mexico
State Capitol
Santa Fe, New Mexico 87503

The Honorable Paul G. Bardacke, Esq.
Attorney General of the State of New Mexico
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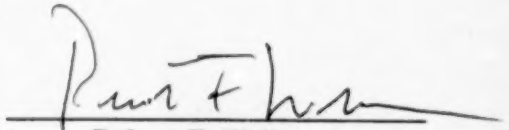
I certify that on September 22, 1983, pursuant to Rule 28 of the Rules of the Supreme Court of the United States, I caused to be served by express mail, postage prepaid, the requisite number of copies of the foregoing Colorado's Brief In Reply To The Exceptions And Brief Of The State Of New Mexico on the following counsel of record:

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I certify that all parties required to be served have
been served.

A handwritten signature in dark ink, appearing to read "Robert F. Welborn", is written over a horizontal line.

Robert F. Welborn
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